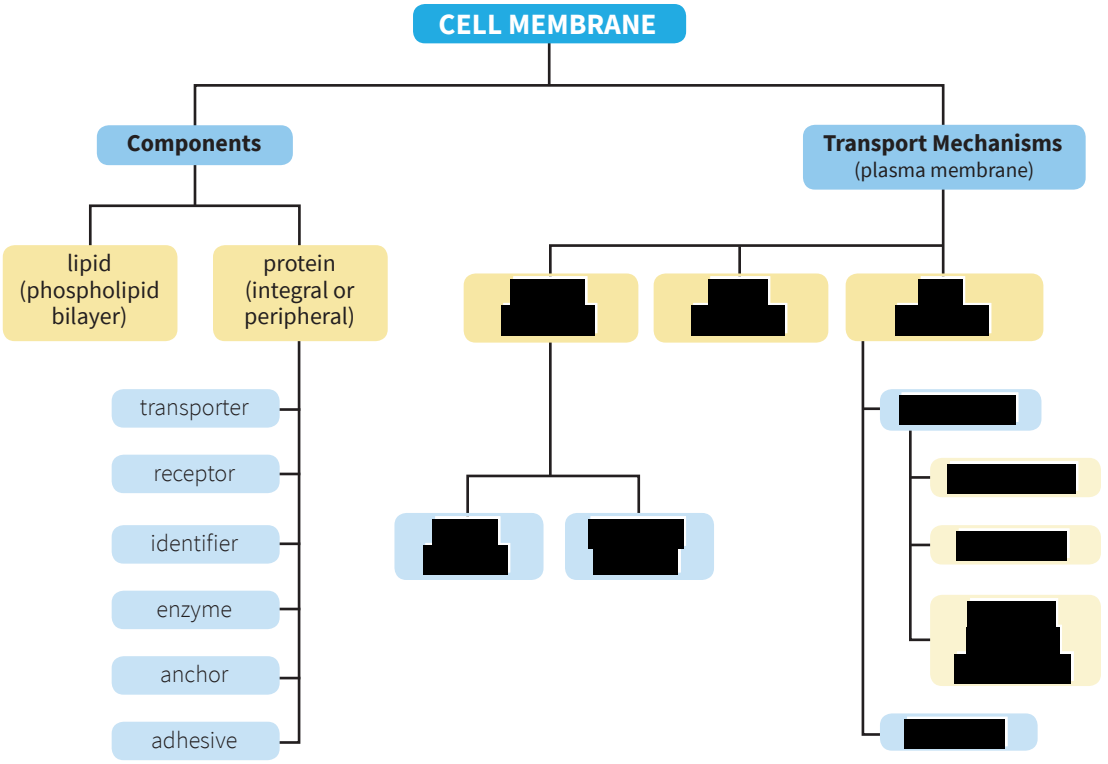
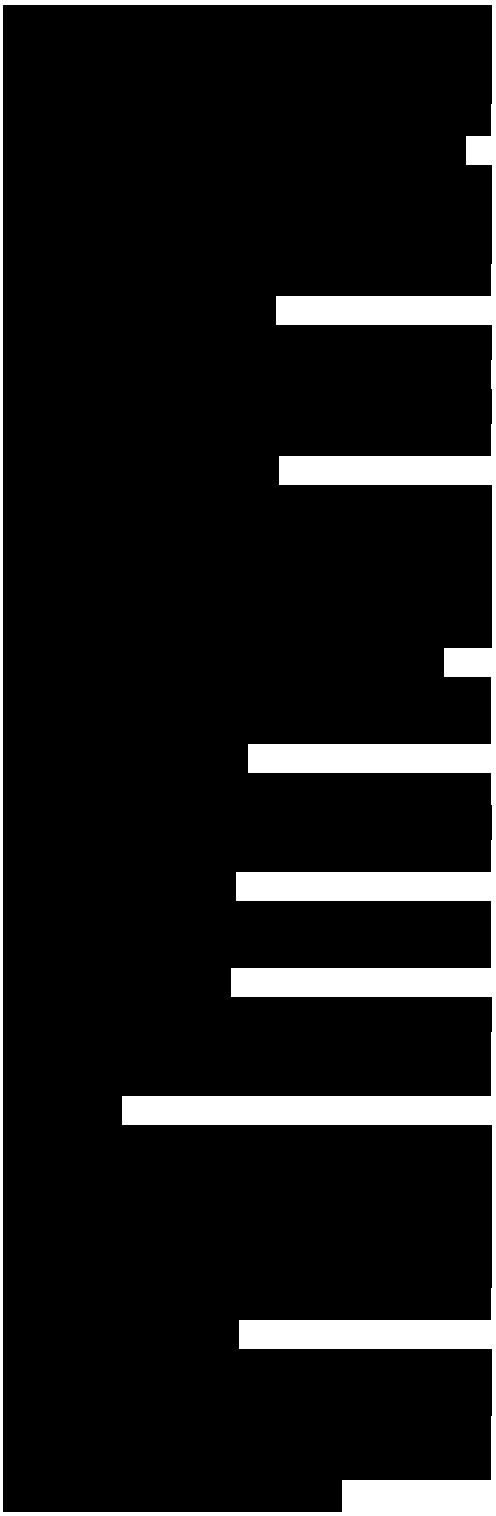


- All eukaryotic cells have plasma membrane and membrane-bound organelles. Substances enter and leave the cell through the membrane. In 1972, Seymour Jonathan Singer and Garth Nicolson reported their Fluid Mosaic Model for the structure of the cell membrane.
- The cell membrane is fluid where the lipid and some protein components can do lateral movements. Other proteins, however, cannot move because they are anchored in place within the membrane. It is a mosaic because of the various kinds and arrangements of lipids, proteins, and carbohydrates in the structure.
- The main components of cell membranes are lipids and proteins. Lipids provide the basic framework as a bilayer. Proteins may either be inserted in the bilayer (integral) or located on its surface (peripheral). Another biomolecule in membranes is carbohydrate, which may be joined to the lipid or protein components (glycolipid or glycoprotein, respectively).

- The lipid components of cell membranes are mostly phospholipids that are amphipathic biomolecules whose hydrophobic tails form the interior of the bilayer, while the hydrophilic heads are on the aqueous side. For example, in plasma membranes, the heads face both the cytosol and the surrounding of the cell.
- Another membrane lipid component found in animal cells is cholesterol, which regulates the rigidity of membranes.
- In plasma membranes, sugars are always located in the exoplasmic surface, or the surface that faces the external environment of the cell.
- The cell membrane is selectively permeable or semipermeable, that is, it does not allow all kinds of substances to cross it easily. Some can simply diffuse, while others need help from proteins.
- In the cell, membrane proteins have specific roles. They may act as transporter, receptor, identifier, enzyme, anchor, or adhesive.
- Transport of substances may be from a region of high concentration to a region of low concentration. In this case, there is "movement down" a concentration gradient. Otherwise, there is "movement against" a concentration gradient.
- In passive transport, small substances cross the membrane down a concentration gradient without input of energy.
- Small molecules like water and ethanol, and gases like oxygen and carbon dioxide can effortlessly move through the plasma membrane; this transport is called simple diffusion.
- When two solutions of different concentrations are separated by a semipermeable membrane, water can pass through down its gradient until the solute concentration is equal on both sides. This flow of water across a selectively permeable membrane is called osmosis.
- In an isotonic solution where the solute concentration outside the cell is the same as that inside, water moves out of and into the cell at the same pace.
- In a hypotonic solution, the solute concentration outside is lower than that found inside the cell. In a hypertonic solution, the opposite condition is present.



KEY TERMS

active transport
adhesive
anchor
bulk transport
carrier
channel
endocytosis
enzyme